

Enterprise Strategy Requirements Engineering Framework: Towards Completeness of System Requirements

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Abstract

Empirical evidence shows that the success of a project depends on the completeness of system requirements. Although requirements engineering literature demonstrates how important strategic business goals are for the development of requirements models, it does not examine their effect on the completeness of system requirements.

The objective of this research is to propose and test a framework that shows the influence of strategic business requirements on the completeness of system requirements. The framework integrates strategic business requirements with the functional requirements, non-functional requirements and completeness of system requirements to measure their direct and indirect influence.

This framework (the Enterprise Strategic Requirements Engineering Framework) has been evaluated and validated by two studies. In the first study, business analysts collected lists of requirements from system stakeholders. In the second study, business analysts assessed those lists in terms of their completeness. More than 100 business analysts with varying degrees of experience participated in these studies. Structured equation models were used to analyse the data in order to show the effects of strategic business requirements on the completeness of system requirements. The results support the proposed framework and show that it is a true representation of the relationship between strategic business requirements, functional requirements, non-functional requirements and the completeness of requirements lists.

This thesis contributes to the field of requirements engineering in various ways. It highlights the importance of collecting a list of strategic business requirements and it demonstrates why this should be treated as an individual list, rather than simply a sub-set of a list of non-functional requirements. The results also show that strategic business requirements influence both non-functional and functional requirements, as well as the completeness of system requirements. Finally, the research found that business analysts

play a critical role in capturing requirements. The results show that novices did not approach many stakeholders and did not consider any business strategy requirements, whereas more experienced business analysts collected requirements from many stakeholders, including senior management, where strategic business requirements were available.

This framework will be extremely valuable in giving support to the many approaches that highlight the importance of strategy. It clarifies the importance of collecting strategic business requirements and it will be valuable for the education of requirements engineers, business analysts and others who perform the task of collecting requirements.

Declaration of Originality

I certify that this thesis does not incorporate without acknowledgement any material previously submitted for a degree or diploma in any university; and that to the best of my knowledge and belief it does not contain any material previously published or written by another person except where due reference is made in the text.

Signed: _____ On: ____/____/____

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List of Abbreviations

CEO	chief executive officer
CFI	comparative fit index
CIO	chief information officer
EA	enterprise architect
ESRE	enterprise strategy requirements engineering
GFI	goodness of fit index
IEEE	Institute of Electrical and Electronics Engineers
IT	information technology
MCAR	missing completely at random
MVA	missing value analysis
R&D	research and development
RMSEA	root mean square error of approximation
SEM	structural equation model
SRMR	standardised root mean square residual
UTS	University of Technology Sydney